

Claims

1. A method for inducing apoptosis in a tumor cell, comprising:
contacting a tumor cell with an amount of a metabolic modifying agent, which when exposed to a cell causes coupling of electron transport and oxidative phosphorylation, effective to increase the mitochondrial membrane potential in the tumor cell, wherein the metabolic modifying agent is selected from the group consisting of glucose, an MHC class II HLA-DP/DQ ligand, phorbol myristate acetate in combination with ionomycin, GDP, sodium acetate, UCP antisense, dominant negative UCP, and staurosporine, and
contacting the tumor cell with an amount of an apoptotic chemotherapeutic agent effective for inducing apoptosis in the tumor cell.
2. The method of claim 1, wherein the apoptotic chemotherapeutic agent is selected from the group consisting of adriamycin, cytarabine, doxorubicin, and methotrexate.
3. The method of claim 1, wherein the metabolic modifying agent and the apoptotic chemotherapeutic agent are administered simultaneously.
4. The method of claim 1, wherein the metabolic modifying agent and the apoptotic chemotherapeutic agent are administered locally.
5. The method of claim 1, wherein the tumor cell is resistant to the apoptotic chemotherapeutic agent.
6. The method of claim 1, wherein the tumor cell is sensitive to the apoptotic chemotherapeutic agent, and wherein the amount of metabolic modifying agent is effective to increase mitochondrial membrane potential and the amount of apoptotic chemotherapeutic agent is effective to inhibit the proliferation of the tumor cell when the mitochondrial membrane potential is increased.
7. A method for inducing apoptosis in a tumor cell, comprising:

contacting a tumor cell with an amount of a metabolic modifying agent, which when exposed to a cell causes coupling of electron transport and oxidative phosphorylation, effective to increase the mitochondrial membrane potential in the tumor cell, and

contacting the tumor cell with an amount of an apoptotic chemotherapeutic agent effective for inducing apoptosis in the tumor cell, wherein the apoptotic chemotherapeutic agent is selected from the group consisting of cytarabine, doxorubicin, and methotrexate.

8. The method of claim 7, wherein the metabolic modifying agent is selected from the group consisting of glucose, an MHC class II HLA-DP/DQ ligand, phorbol myristate acetate in combination with ionomycin, GDP, sodium acetate, UCP antisense, dominant negative UCP, and staurosporine.

9. The method of claim 7, wherein the metabolic modifying agent and the apoptotic chemotherapeutic agent are administered simultaneously.

10. The method of claim 7, wherein the metabolic modifying agent and the apoptotic chemotherapeutic agent are administered locally.

11. The method of claim 7, wherein the tumor cell is resistant to the apoptotic chemotherapeutic agent.